EGG POD FORMATION BY *CALLIRHOPALUS* (SUBG. *PSEUDOCNEORHINUS) BIFASCIATUS* (ROELOFS) (COLEOPTERA: CURCULIONIDAE: EREMNINAE)

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Abstract

Callirhopalus (subg. *Pseudocneorhinus) bifasciatus* (Roelofs) adults were observed ovipositing in leaves of California privet, *Ligustrum ovalifolium* Hassk. The insects form egg pods in leaves by folding the edges or tips with their legs, ovipositing in the fold thus formed, and sealing the folds with a clear fluid by clamping the leaves with their tibiae. An average of 5.1 eggs were found in each pod.

Callirhopalus (subg. *Pseudocneorhinus) bifasciatus* (Roelofs) is an occasionally serious pest of ornamental plants in the eastern United States, and it has recently been found in the midwest (Schuder 1969, Illinois Pest Survey 1976). Smith (1955) reported finding the insects' eggs in "partially eaten, curled, and dried leaves," and Allen (1957) observed that the parthenogenetic weevils form small "pods" in dead leaves to enclose their eggs. During my rearing of this species I have closely observed the insects' oviposition behavior, and I now describe the manner in which the egg pods are formed.

Methods

The insects observed during this study were collected July 28, 1977 on the foliage and stems of *Rhododendron* spp. in Scarsdale, New York. The weevils were maintained in my laboratory at Cornell University in 10 cm, disposable petri dishes (5 weevil/dish) and provided with foliage of California privet, *Ligustrum ovalifolium* Hassk, for food and oviposition. Fresh foliage was supplied as older foliage dried out.

C. bifasciatus adults commonly feign death when they are disturbed, but they seem to be oblivious to disturbances when actively ovipositing. Therefore, when I found a weevil which had begun to oviposit, I removed it and the leaf it was on from the petri dish for closer observation and photographing.

Discussion

Prior to ovipositing, a weevil positions itself along the edge—or more commonly, at the tip—of a soft leaf and folds the leaf behind itself using its meso- and metathoracic legs. The ovipositor is then inserted into the resultant fold, and an egg deposited. Following the egg, a copious quantity of a clear, sticky fluid is secreted into the fold. The weevil withdraws its ovipositor, raises its body up off the leaf, turns its meso- and metathoracic tarsi outward away from the leaf (Fig. 1), and clamps the fold tightly

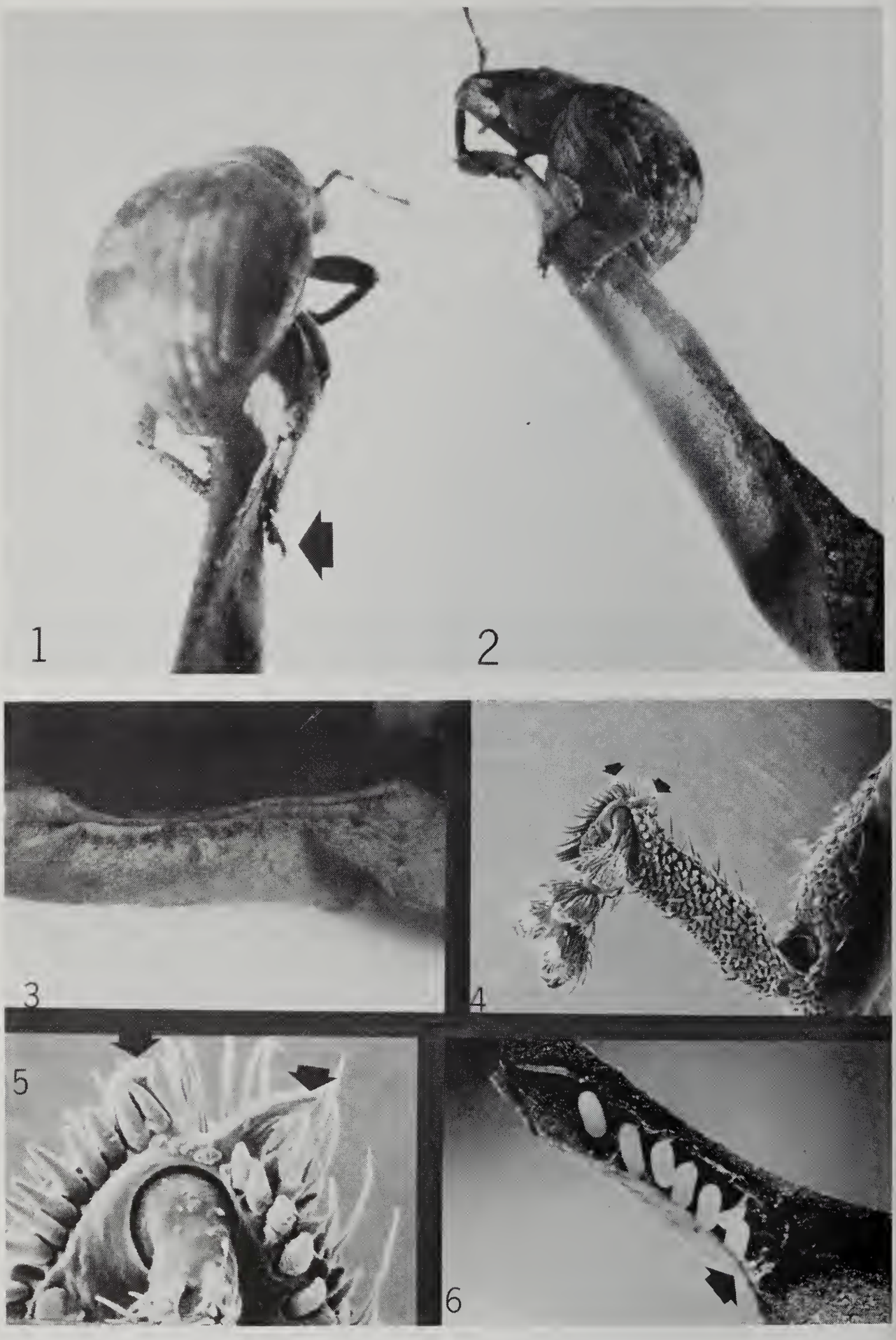

Fig. 1-6, Egg pod formation by *Callirhopalus bifasciatus*: 1) Clamping folded *Ligustrum ovalifolium* leaf with tibiae. Tarsi are turned outward and do not contact the leaf (arrow); 2-3) depressions along margins of folds, caused by apical tibial spurs; 4) Tibia, showing apical spurs (arrows) (30X); 5) Apical spurs (arrows) (137X); 6) Eggs in opened pod. Note the clear, dried material used to seal the fold closed.

closed with its tibiae. The insect remains relatively motionless during this clamping, although slight movements of the antennae may occur. The fluid in the fold dries in ca. 1 min., and the weevil then steps forward to repeat the process. The number of eggs placed in each fold ranged 1-9 among the 33 pods I opened (Fig. 6), and averaged 5.1 eggs/pod (SD=2.24). Allen (1959) found an average of 2.6 eggs/pod among those he examined.

After a weevil has oviposited in a leaf fold, a series of depressions may be visible along the margins (Fig. 2, 3). These are produced during the clamping of the fold, and are caused by the insects' apical tibial spurs, with which they grasp the leaf when the tarsi are turned outward (Fig. 4, 5).

Allen (1957) reported 72% of the egg clusters he collected from caged weevils were found in the leafy debris on the ground; the rest were in leaves or fragments still on the plants. Eggs have also been found "scattered at random" (Schuder 1969), however, none of the several thousands of eggs I have collected were in exposed locations or in leaf tissue attached to caged plants. It appears, therefore, the weevils preferentially oviposit in freshly fallen leaves or fragments which have fallen while the adults were feeding. This seems advantageous to the larvae which burrow into the soil soon after hatching (Allen 1957, 1959).

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